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State of Washington  
Department of Ecology  
Nuclear & Mixed Waste Program  
P. O. Box 47600  
Olympia, WA 98504-7600

FLUOR DANIEL, INC.

Date: December 21, 1992

Reference: Hanford Waste Vitrification Plant  
DOE Contract DE-AC06-86RL10838  
Fluor Contract 8457

Transmittal No.: WDOE-287

Dear Mr. Grantham:

TRANSMITTAL

We enclose \*  copy of the items listed below. These are issued per US-DOE request.

\*2 FULLSIZE BLUELINES ROLLED & 2 SPECIFICATIONS, & 1 REDUCED

Response due to Fluor: N/A

Responds to: B265A PACKAGE

NUMBER	Rev.	Date	TITLE
SEE TRANSMITTAL ATTACHMENT	---	---	B265A PACKAGE VITRIFICATION BUILDING PAINT AND SPECIAL COATINGS

Distribution:

Reference: FRP-679, FUP-313

R. L. Long: DOE-RL w/0

TWP/AME Corresp Cntrl Cntr, MSIN A5-10

(B265A PACKAGE), w/0

P. Felise, WHC-RL (MSIN G6-16), w/1F & 1 SPEC

Environmental Data Management Center

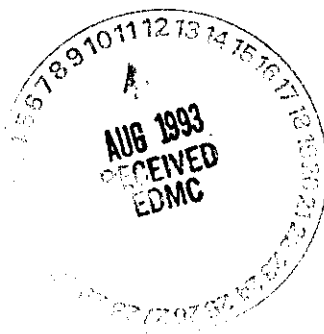
(MSIN H6-08), w/1F & 1 SPEC

D. Duncan, US EPA, Region X, w/0

Very truly yours,

*Rosaki Adenas for /*  
R. S. Poulter  
Project Director

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RSP:JLD:lt



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STATUS DATE 12/21/92  
CONTRACT 845734

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CORDS TRANSMITTAL ATTACHMENT

DISCIPLINE	PACKAGE	DRAWING NUMBER	SHEET NUMBER	DWG REV	SIGNATURE DATE	DRAWING TITLE
30	B265A	N-2-116007	1	0	12/21/92	VIT BLDG PAINT AND SPECIAL COATINGS TITLE SHEET
30	B265A	N-2-116008	1	0	12/21/92	VIT BLDG PAINT AND SPECIAL COATINGS DRAWING INDEX
30	B265A	N-2-117586	1	0	12/21/92	ARCHITECTURAL VIT BLDG GEN NOTES & ABBREVIATIONS
30	B265A	N-2-117587	1	0	12/21/92	ARCHITECTURAL VIT BLDG TUNNEL PLAN-SOUTH END
30	B265A	N-2-117587	2	0	12/21/92	ARCHITECTURAL VIT BLDG TUNNEL PLAN-NORTH END
30	B265A	N-2-117587	3	0	12/21/92	ARCHITECTURAL VIT BLDG TUNNEL PLAN-S/R
30	B265A	N-2-117588	1	0	12/21/92	ARCHITECTURAL VIT BLDG CONTACT MAINT ROOM
30	B265A	N-2-117589	1	0	12/21/92	ARCHITECTURAL VIT BLDG 1ST FLR PLAN-SOUTH END
30	B265A	N-2-117589	2	0	12/21/92	ARCHITECTURAL VIT BLDG 1ST FLR PLAN-NORTH END
30	B265A	N-2-117589	3	0	12/21/92	ARCHITECTURAL VIT BLDG 1ST FLR PLAN-S/R
30	B265A	N-2-117590	1	0	12/21/92	ARCHITECTURAL VIT BLDG MEZZ PLAN-SOUTH END
30	B265A	N-2-117590	2	0	12/21/92	ARCHITECTURAL VIT BLDG MEZZ PLAN-NORTH END
30	B265A	N-2-117591	1	0	12/21/92	ARCHITECTURAL VIT BLDG 2ND FLR PLAN-SOUTH END
30	B265A	N-2-117591	2	0	12/21/92	ARCHITECTURAL VIT BLDG 2ND FLR PLAN-NORTH END
30	B265A	N-2-117592	1	0	12/21/92	ARCHITECTURAL VIT BLDG 3RD FLR PLAN-SOUTH END
30	B265A	N-2-117592	2	0	12/21/92	ARCHITECTURAL VIT BLDG 3RD FLR PLAN-NORTH END
30	B265A	N-2-117593	1	0	12/21/92	ARCHITECTURAL VIT BLDG THIRD FLOOR MEZZ PLAN
30	B265A	N-2-117594	1	0	12/21/92	ARCHITECTURAL VIT BLDG 4TH FLR PLAN-SOUTH END
30	B265A	N-2-117594	2	0	12/21/92	ARCHITECTURAL VIT BLDG 4TH FLR PLAN-NORTH END
30	B265A	N-2-117595	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTION A
30	B265A	N-2-117596	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTION B
30	B265A	N-2-117597	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTION C-SOUTH END
30	B265A	N-2-117597	2	0	12/21/92	ARCHITECTURAL VIT BLDG SECTION C-NORTH END
30	B265A	N-2-117598	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTION D-SOUTH END
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30	B265A	N-2-117600	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTS F, G, H, J, P & R
30	B265A	N-2-117601	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTS L & M
30	B265A	N-2-117602	1	0	12/21/92	ARCHITECTURAL VIT BLDG SECTS K, N & TYP DETAILS

00/PIPING & INSTRUMENT DIAGRAMS, 05/CIVIL, 10/HVAC, 20/STRUCTURAL, 30/ARCHITECTURAL, 40/MECHANICAL, 50/PIPING, 51/FIRE PROTECTION,  
60/ELECTRICAL, 70/CONTROL SYSTEMS, 90/MISCELLANEOUS

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STATUS DATE 12/21/92  
CONTRACT 845734

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CORDS TRANSMITTAL ATTACHMENT

DISCIPLINE	PACKAGE	DRAWING NUMBER	SHEET NUMBER	DWG REV	SIGNATURE DATE	DRAWING TITLE
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TOTAL: 30

00/PIPING & INSTRUMENT DIAGRAMS, 05/CIVIL, 10/HVAC, 20/STRUCTURAL, 30/ARCHITECTURAL, 40/MECHANICAL, 50/PIPING, 51/FIRE PROTECTION, 60/ELECTRICAL, 70/CONTROL SYSTEMS, 90/MISCELLANEOUS

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CORDS TRANSMITTAL ATTACHMENT

DISCIPLINE	PACKAGE	SPECIFICATION	PKG	PACKAGE TITLE	SECTION	SECTION	SECTION TITLE
		NUMBER	REV		NUMBER	REV	
	B265A	B-595-C-B265A	0	VIT BLDG PAINT AND SPECIAL COATINGS			
30	B265A				03350	0	CONCRETE SEALER AND HARDENER
30	B265A				09800	0	SPECIAL COATINGS
30	B265A				09875	0	PRIMING OF STEEL
30	B265A				09940	0	HIGH PERFORMANCE PAINTING

TOTAL: 5

00/PIPING & INSTRUMENT DIAGRAMS, 05/CIVIL, 10/HVAC, 20/STRUCTURAL, 30/ARCHITECTURAL, 40/MECHANICAL, 50/PIPING, 51/FIRE PROTECTION, 57/PIPING STRESS, 58/PIPING MATERIAL, 60/ELECTRICAL, 70/CONTROL SYSTEMS, 90/MISCELLANEOUS

VITRIFICATION BUILDING  
PAINT AND SPECIAL COATINGS  
SPECIFICATION B-595-C-B265A

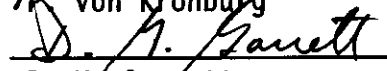
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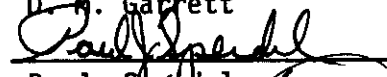
REVISION 0

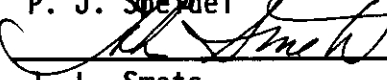
ISSUE DATE 12-21-92

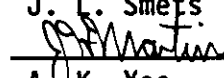
APPROVED BY:


  
J. von Kronburg Project Package Engineer

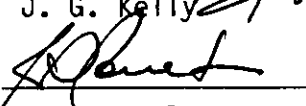
  
D. M. Garrett Area Project Manager

  
P. J. Spindel Engineering Project Manager

  
J. L. Smets Systems Manager

  
A.K. Yee FOR A.K. YEE Independent Safety Manager

  
J. G. Kelly Quality Assurance Manager

  
R. S. Poulter Project Director

12-18-92  
Date

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VITRIFICATION BUILDING  
PAINT AND SPECIAL COATINGS  
B-595-C-B265A

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TECHNICAL SPECIFICATIONS

DIVISION 3 - CONCRETE

Section	Title	Rev.
03350	Concrete Sealer and Hardener	0

DIVISION 9 - FINISHES

Section	Title	
09800	Special Coatings	0
09875	Priming of Steel	0
09940	High Performance Painting	0

U.S. DEPARTMENT OF ENERGY  
Hanford Waste Vitrification Plant  
Richland, Washington  
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.  
Advanced Technology Division  
Fluor Contract 8457

SECTION 03350  
CONCRETE SEALER AND HARDENER  
B-595-C-B265A-03350

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REVISION 0  
ISSUE DATE 12-21-92

WAPA YES    NO X  
QUALITY LEVEL I    II X  
SAFETY CLASS 1    2    3 X 4   

ORIGINATOR:

CHECKER:

P. von Kronburg, Architect 12-18-92  
Date

J. L. Datte, Architectural Lead 12/18/92  
Date

APPROVED BY:

J. L. Datte Lead Discipline Engineer

12/18/92  
Date

SECTION 03350  
CONCRETE SEALER AND HARDENER  
B-595-C-B265A-03350

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**SECTION 03350  
CONCRETE SEALER AND HARDENER**

**PART 1 GENERAL**

**1.1 SUMMARY**

This section covers minimum technical requirements for the preparation of concrete surfaces and the furnishing and application of concrete sealer and hardener.

**1.2 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM C42	1990 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM C805	1985 Standard Test Method for Rebound Number of Hardened Concrete
ASTM D3359	1990 Standard Test Methods for Measuring Adhesion by Tape Test
ASTM D4060	1984 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4258	1983 (Reapproved 1988) Standard Practice for Surface Cleaning Concrete for Coating
ASTM G23	1989 Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials

**1.3 RELATED REQUIREMENTS**

(Not Used)

**1.4 DEFINITIONS**

- 1.4.1 The terms, "concrete sealer and hardener", and "concrete sealer/hardener" are used interchangeably.

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1.4.2 Surfaces

Surfaces are defined as all concrete surfaces, including trenches, vaults, and nonvisible areas when permanent or built-in fixtures, equipment, etc., are in place in areas to be coated as scheduled in the Contract Drawings.

1.5 SYSTEM DESCRIPTION

(Not Used)

1.6 SUBMITTALS

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract:

1.6.1 Product Data

Submit manufacturer's published technical information including Material Safety Data Sheets (MSDS), and application instructions.

1.6.2 Samples

Submit samples of material and finish for review by Buyer before starting work.

1.6.3 Test Reports

Submit test reports made within the previous three years of the date of issue of this section on samples of the products proposed for the work. Such test reports shall be by nationally recognized laboratories or laboratories acceptable to the Buyer. Test Reports shall include dates of testing, locations from which samples were obtained, and test results including abrasion resistance, bonding strength, compressive strength, permeability, weathering, and results of tests referred to in Part 2 of this specification section.

1.6.4 Sample Panels or Sample Installations

Install in a location designated by the Buyer, a minimum of 100 square feet. The installation procedure as published by the manufacturer of the concrete sealer/hardener is of prime importance. When approved by the manufacturer's representative and the Buyer, maintain the same controls and procedures throughout the remainder of the job. All work must be of the quality approved in the sample area.

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1.6.5 Operation and Maintenance (O&M) Manuals

Submit manufacturer's printed application, maintenance, and repair instructions including mixing instructions, pot life, storage requirements, surface preparation requirements, and safety requirements. Include inspection intervals and methods of determining system integrity.

1.6.6 Manufacturer's Approval of Applicator

Submit written approval of applicator by manufacturer of concrete sealer/hardener.

1.7 CLASSIFICATION OF SYSTEM AND COMPONENTS

(Not Used)

1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS

The Vitrification Building has been designed to operate for 40 years with a normal operating temperature within the range 40°F to 120°F. Humidity is not controlled.

1.9 DELIVERY, STORAGE AND HANDLING

1.9.1 Deliver materials to the job site in the manufacturer's original, unopened packages, with labels intact, legible, and conspicuous. Provide the following information with all deliveries:

1.9.1.1 Name or title of material;

1.9.1.2 Manufacturer's name, stock number, and date of manufacture;

1.9.1.3 Shelf life and special storage requirements;

1.9.1.4 Application instructions;

1.9.1.5 Clean-up instructions (for surfaces not intended to receive concrete sealer/hardener);

1.9.1.6 Material Safety Data Sheets (MSDS) complete for each material provided in shipment.

1.9.2 Store materials not in actual use in tightly covered containers within the manufacturer's written recommended storage temperature ranges.

1.10 SPECIAL REQUIREMENTS

1.10.1 Materials

All materials of the concrete sealer/hardener system shall be the products of a single manufacturer. Application of multiple manufacturers's products is strictly prohibited.

1.10.2 Installer

Concrete sealer/hardener system specified in this section shall be installed by installer(s) approved by the manufacturer of the materials.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 Materials

The products herein described are manufactured by Curecrete Chemical Company, Inc., Springville, Utah. They are intended to establish minimum acceptable standards of quality of materials, finish, and performance, and are not intended to exclude from consideration comparable products of other manufacturers. Products of other manufacturers will be permitted provided such materials are of equal quality and of the required characteristics for the purpose intended, subject to authorization by the Buyer.

2.1.1.1 Concrete Sealer/Hardener [Ashford Formula]

A colorless, transparent, non-film forming chemical liquid that penetrates into the concrete where it reacts with the alkali and lime (commonly called concrete salts). During this reaction it chemically combines with the salts, melting them within the concrete into a gel which locks the pores of the concrete, thereby densifying the concrete into a solid mass. There shall be a 94% greater moisture loss from untreated samples during the initial 24 hour curing period. The seepage rate using a 7 inch head of water on a 4.91 square inch area treated with the solution shall not exceed 0.0083 cc per hour. There shall be no adverse effect on treated surfaces by exposure to ultraviolet light and water spray in accordance with ASTM G23. Treated surfaces shall have 38% increase in compressive strength at 28 days in accordance with ASTM C42. Impact resistance of treated surfaces shall be increased 13.3% in accordance with ASTM C805 (Schmidt Hammer). Epoxy bonding adhesion of treated surfaces shall increase 17% minimum in accordance with ASTM D3359. Treated surfaces shall show a 30.7% increase in abrasion resistance in accordance with ASTM D4060 (Taber Abraser).

## 2.2 FABRICATION AND MANUFACTURE

(Not Used)

## PART 3 EXECUTION

### 3.1 PREPARATION

#### 3.1.1 General

Concrete surfaces shall be prepared to receive sealer/hardener in accordance with the concrete sealer/hardener manufacturer's written instructions unless otherwise specified. All finished surfaces shall be prepared with the objective of obtaining a clean, dry, and properly prepared substrate.

#### 3.1.2 Inspection

Prior to the installation of any concrete sealer/hardener examine the existing surfaces and substrate to verify that they are ready to receive the concrete sealer/hardener in accordance with the manufacturer's printed instructions. In the event of discrepancy, promptly notify the Buyer. Do not proceed with installation in areas of discrepancy until authorized by the Buyer.

#### 3.1.3 Concrete Surfaces

##### 3.1.3.1 Curing Period

Concrete shall be allowed to cure a minimum of 28 days prior to the application of any concrete sealer/hardener, or as recommended by the manufacturer of concrete sealer/hardener.

##### 3.1.3.2 Form Release Agents

Form release agents used during the construction of the concrete shall be removed unless known to be compatible with the concrete sealer/hardener selected.

##### 3.1.3.3 Curing Compounds

Concrete curing compounds shall be removed unless known to be compatible with the concrete sealer/hardener selected.

##### 3.1.3.4 Contaminants

Oil, grease, and materials considered deleterious by the manufacturer of the concrete sealer/hardener shall be removed in accordance with manufacturer's written recommendations, followed

by washing of contaminated areas with detergent and water; washing in accordance with ASTM D4258.

### 3.1.3.5 Sweeping and Hosing

Clean all areas to be treated with a fine bristle broom, or scrub, hose off with water, and let dry to remove surface dust, dirt, and contamination. Pressurized air may be used provided the equipment is oil-free.

## 3.2 INSTALLATION, APPLICATION AND ERECTION

### 3.2.1 General

Application shall be in accordance with the manufacturer's written instructions unless otherwise specified. The extent of application shall include all surfaces shown, scheduled, or specified.

### 3.2.2 Environmental Conditions

Temperature of materials and substrate shall be in accordance with the manufacturer's written instructions. If the manufacturer has no written instructions, then the material and substrate shall both be between 35°F and 135°F for 24 hours before, during, and after application, through the curing and drying periods, unless otherwise specified.

### 3.2.3 Humidity

Humidity shall be measured in the area prior to placing concrete sealer/hardener. The humidity shall be within the range specified in the manufacturer's written instructions. If the manufacturer has no written instructions, no material shall be applied when the relative humidity is above 85% or the temperature of the surface is less than 5°F above the dew point unless otherwise specified.

### 3.2.4 Inclement Weather

#### 3.2.4.1 Work may continue during inclement weather only if areas and surfaces to be coated are enclosed or protected and the temperature and environmental conditions within the area are maintained within the limits specified by the manufacturer during application and curing periods.

#### 3.2.4.2 Application on wet surfaces shall be in accordance with the manufacturer's written instructions, but in no case shall concrete sealer/hardener solution be diluted by surface moisture before it is able to penetrate the surface.

3.2.5 Application

3.2.5.1 Method

Low pressure spray is the preferred method of application. Alternatively, application may be by roller, brush, or squeegee and shall be in accordance with the sealer/hardener manufacturer's written recommendations.

3.2.5.2 Location

Concrete sealer/hardener shall be applied on all concrete surfaces as shown on Contract Drawings or specified herein, except that in areas scheduled to receive special coatings or high performance paint, concrete sealer/hardener shall be applied prior to application of special coatings or high performance paint only if acceptable to the manufacturer of the special coating or high performance paint.

3.2.6 Sample Area

The sample area described in Part 1 of this specification section may, when approved, be incorporated into the work area.

3.3 FIELD QUALITY CONTROL

3.3.1 Testing

The Buyer reserves the right to invoke the following material testing procedure at any time, and any number of times during the work:

3.3.1.1 The Buyer may engage the services of an independent testing laboratory to sample materials being used. Samples of materials delivered to the project site will be taken, identified, sealed, and certified in the presence of the Seller.

3.3.1.2 Testing laboratory may perform appropriate tests to verify requirements specified in Paragraph 2.1 of this Specification Section.

3.4 ADJUSTMENTS

3.4.1 Repairs

3.4.1.1 Improperly treated surfaces, and holidays shall be repaired using the materials specified for the original work, unless otherwise specified, in accordance with written recommendations of the sealer/hardener manufacturer.

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3.5 **CLEANING**

- 3.5.1 Sealer/hardener materials applied to surfaces not intended or designated to receive sealer/hardener system shall be cleaned in accordance with the manufacturer's written instructions.

3.6 **PROTECTION**

3.6.1 Surfaces and Fixtures

Remove, mask, or otherwise protect surfaces and fixtures not intended to be treated.

3.6.2 Equipment

Protect working parts of mechanical and electrical equipment from damage during surface preparation and concrete sealer/hardener application process.

3.6.3 Drains

Drains shall be plugged during installation of concrete sealer/hardener to ensure that material does not enter drainage system. All gratings, if any, shall be removed prior to concrete sealer/hardener application.

3.7 **DEMONSTRATION**

(Not Used)

3.8 **SCHEDULES**

(Not Used)

END OF SECTION

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U.S. DEPARTMENT OF ENERGY  
Hanford Waste Vitrification Plant  
Richland, Washington  
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.  
Advanced Technology Division  
Fluor Contract 8457

SECTION 09800  
SPECIAL COATINGS  
B-595-C-B265A-09800

APPROVED FOR CONSTRUCTION

REVISION 0  
ISSUE DATE 12-21-92

WAPA YES    NO X  
QUALITY LEVEL I    II X  
SAFETY CLASS 1    2    3 X 4   

ORIGINATOR:

P. von Kronburg, Architect 12/18/92  
Date

CHECKER:

J. L. Datte 12/18/92  
J. L. Datte, Architectural Lead Date

APPROVED BY:

J. L. Datte  
J. L. Datte Lead Discipline Engineer

12/18/92  
Date

SECTION 09800  
SPECIAL COATINGS  
B-595-C-B265A-09800

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**SECTION 09800  
SPECIAL COATINGS**

**PART 1 GENERAL**

**1.1 SUMMARY**

This section covers minimum technical requirements for the preparation of concrete surfaces and the furnishing and installation of special coatings which are chemical resistant, abrasion resistant, radiation resistant (where specified), and decontaminable.

**1.2 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

**AMERICAN CONCRETE INSTITUTE (ACI)**

ACI 503R                      1989 Use of Epoxy Compounds with  
Concrete

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM B117                      1990 Standard Test Method of Salt  
Spray (Fog) Testing

ASTM C190                      1985 Tensile Strength of Hydraulic  
Cement Mortars, Test Method for

ASTM D579                      1989 Standard Specification for  
Greige Woven Glass Fabrics

ASTM D1005                      1984 (Reapproved 1990) Standard  
Test Method for Measurement of Dry  
Film Thickness or Organic Coatings  
Using Micrometers

ASTM D1212                      1991 Standard Test Methods for  
Measurement of Wet Film Thickness  
of Organic Coatings

ASTM D1653                      1991 Rev. A Standard Test Methods  
for Water Vapor Transmission of  
Organic Coating Films

ASTM D2247                      1987 Standard Practice for Testing  
Water Resistance of Coatings in  
100% Relative Humidity

ASTM D2794	1990 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D3843	1989 Standard Practice for Quality Assurance for Protective Coatings Applied to Nuclear Facilities
ASTM D3912	1980 (Reapproved 1989) Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants
ASTM D4060	1984 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4082	1989 Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants
ASTM D4227	1983 (Reapproved 1989) Standard Practice for Qualification of Journeyman Painters for Application of Coatings to Concrete Surfaces of Safety-Related Areas of Nuclear Facilities
ASTM D4256	1989 Standard Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants
ASTM D4258	1983 (Reapproved 1988) Standard Practice for Surface Cleaning Concrete for Coating
ASTM D4259	1988 Standard Practice for Abrading Concrete
ASTM D4263	1983 (Reapproved 1988) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4286	1990 Standard Practice for Determining Coating Contractor Qualification for Nuclear Powered Electric Generation Facilities

ASTM D4537	1991 Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coating Work in Nuclear Facilities
ASTM D4541	1985 (Reapproved 1989) Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM D5144	1991 Standard Guide for Use of Protective Coatings Standards in Nuclear Power Plants
ASTM D5163	1991 Standard Guide for Establishing Procedures to Monitor the Performance of Safety Related Coatings in an Operating Nuclear Power Plant
ASTM G14	1988 Standard Method for Impact Resistance of Pipeline Coatings (Falling Weight Test)
ASTM G53	1988 Standard Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV- Condensation Type) for Exposure of Nonmetallic Materials

FEDERAL STANDARDS (FED-STD)

FED-STD 595B	1989 Colors Used in Government Procurement
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NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

NACE RP0172	1972 Surface Preparation of Steel and Other Hard Materials by Water Blasting Prior to Coating or Recoating
NACE TM0169	1969 (Revised 1976) Laboratory Corrosion Testing of Metals for the Process Industries

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101	1988 Life Safety Code
NFPA 255	1990 Standard Method of Test of Surface Burning Characteristics of Building Materials

1.3 RELATED REQUIREMENTS

Specification Section 03350	Concrete Sealer and Hardener
Specification Section 09940	High Performance Painting

1.4 DEFINITIONS

- 1.4.1 The terms "Special Coatings", "Coatings", "Special Coatings Systems", and "Coating Systems" are used interchangeably and are defined as high build, heavy duty corrosion control coating and lining systems of generally high viscosity and thixotropy. These materials differ in properties, handling, mixing, and application procedures and techniques relative to ordinary paint and high performance paint systems.

1.4.2 System

The words "system" and "systems" when used in conjunction with special coatings refer to combinations of primer, surfacer, coating, and finish coats as scheduled in Part 3 of this Specification Section.

1.4.3 Surfaces

Surfaces are defined as all concrete surfaces, including trenches, vaults, and nonvisible areas when permanent or built-in fixtures, equipment, etc., are in place in areas to be coated as scheduled in the Contract Drawings.

1.4.4 Open Joint

A joint which remains conspicuous after coating.

1.4.5 Closed Joint

A joint which is concealed and inconspicuous after coating.

1.4.6 DFT

Dry film thickness

1.4.7 WFT

Wet film thickness

1.5 SYSTEM DESCRIPTION

(Not Used)

1.6 SUBMITTALS

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract:

1.6.1 Product Data

Submit manufacturer's published technical information including Material Safety Data Sheets (MSDS), and application instructions for each coating and joint material specified or proposed.

1.6.2 Samples

Submit samples of material and finish for review by Buyer before starting work.

1.6.3 Test Reports

1.6.3.1 Submit test reports made within the previous three years of the date of issue of this section on samples of the products proposed for the work. Such test reports shall be by nationally recognized laboratories or laboratories acceptable to the Buyer. Test Reports shall include dates of testing, locations from which samples were obtained, and test results including compression strengths, bond strengths, abrasion resistance, impact resistance, chemical resistance, temperature resistance, radiation resistance, and results of tests referred to in Paragraph 2.1 of this specification section.

1.6.3.2 Submit test reports made on samples of the systems proposed for the work in accordance with ASTM D3912 using the chemical service requirements of Paragraph 2.3 of this specification section.

1.6.4 Sample Panels or Sample Installations

Install in a location designated by the Buyer, a minimum of 100 square feet. The installation procedure as published by the manufacturer of the special coatings is of prime importance. When approved by the manufacturer's representative and the Buyer, maintain the same controls and procedures throughout the remainder of the job. All work must be of the quality approved in the sample area.

1.6.5 Joint Treatment

Submit details for the treatment of construction, and control joints, including description of proposed materials and application procedures. Submit details for the treatment of cracks in the substrate to which special coating materials are to be applied. Joint treatment details shall be submitted for information only.

1.6.6 Coves

Submit construction details for floor/wall coves, including description of proposed materials and application procedures.

1.6.7 Operation and Maintenance (O&M) Manuals

Submit manufacturer's printed application, maintenance, and repair instructions, including mixing instructions, pot life, storage requirements, surface preparation requirements, and safety requirements. Include inspection intervals, and methods of determining coating system integrity. Comply with ASTM D5163.

1.6.8 Manufacturer's Approval of Applicator

Submit written approval of applicator by manufacturer of special coatings.

1.6.9 Installer's Qualifications.

Submit written documentation of qualifications conforming to requirements of ASTM D4286.

1.6.10 Quality Assurance Program

Submit written copy of Quality Assurance Program for each of the following:

Manufacture of Materials  
Installation  
Inspection

1.7 CLASSIFICATION OF SYSTEM AND COMPONENTS

(Not Used)

1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS

The Vitrification Building has been designed to operate for 40 years with a normal operating temperature within the range 40°F to 120°F. Humidity is not controlled.



1.9 DELIVERY, STORAGE, AND HANDLING

1.9.1 Deliver materials to the job site in the manufacturer's original, unopened packages, with labels intact, legible, and conspicuous. Provide the following information with all deliveries:

1.9.1.1 Name or title of material;

1.9.1.2 Manufacturer's name, stock number, and date of manufacture;

1.9.1.3 Shelf life and special storage requirements;

1.9.1.4 Thinning instructions;

1.9.1.5 Mixing instructions;

1.9.1.6 Application instructions;

1.9.1.7 Clean-up instructions (for surfaces not intended to be coated);

1.9.1.8 Material Safety Data Sheets (MSDS) complete for each material provided in shipment.

1.9.2 Store materials not in actual use in tightly covered containers within the manufacturer's written recommended storage temperature ranges.

1.10 SPECIAL REQUIREMENTS

1.10.1 General

Special coating systems shall conform to requirements of ASTM D3843, including fabrication of materials, certification of installers, and application, testing, and inspecting.

1.10.2 Classification

The special coatings systems shall conform to requirements of ASTM D5144, Level II.

1.10.3 Materials

1.10.3.1 Single Manufacturer

All materials of the special coatings systems, including primer, finish coats, thinners, cleaners, driers, and other additives shall be products of a single manufacturer. Application of multiple manufacturers's products is strictly prohibited. [ In the event that the manufacturer of the special coatings systems does not produce a certified radiation resistant coating as specified below, then the radiation resistant coating and

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associated components shall be Amercoat 90 as manufactured by Ameron PCD, Brea, California, or certified and approved equal; all other special coatings systems and components shall be products of a single manufacturer. ]

#### 1.10.3.2 Compatibility

The manufacturer of special coatings shall be identical to the manufacturer of high performance paint as specified in Specification Section 09940, "High Performance Painting."

#### 1.10.4 Installer

Special coatings systems specified in this section shall be prepared and installed by firm(s) approved by the manufacturer of the materials. Individual installers employed by the approved firm(s) shall be qualified in accordance with ASTM D4227.

## PART 2 PRODUCTS

### 2.1 MATERIALS AND EQUIPMENT

#### 2.1.1 Materials

The products herein described are manufactured by Ameron, PCD, Brea California. They are intended to establish minimum acceptable standards of quality of materials, finish, and performance, and are not intended to exclude from consideration comparable products of other manufacturers. Products of other manufacturers will be permitted provided such materials are of equal quality and of the required characteristics for the purpose intended, subject to authorization by the Buyer.

##### 2.1.1.1 Filler Compound [Nu-Klad 114A]

Two-component, 100% solids, amine cured epoxy filler compound; off-white in color. Provide cleaner as recommended by filler compound manufacturer.

##### 2.1.1.2 Primer/Sealer [Nu-Klad 105A]

Two-component, 100% solids, amine cured epoxy penetrating primer and sealer for use on concrete surfaces.

##### 2.1.1.3 Self-Leveling Surfacer [Nu-Klad 120]

Three-component (resin, cure, and powder), self-leveling, 100% solids, aromatic amine cured epoxy surfacer; sprayable or notch trowel spreadable. Compressive strength: ASTM D579, Method A,

11,000 psi minimum. Impact resistance: ASTM G14 (modified) 160 inch-pounds. Tensile strength: ASTM C190, 2500 psi.

2.1.1.4 Surfacers [Amercoat 3228]

Three-component amine-cured epoxy surfacer, 100% solids.

2.1.1.5 Coating [Amerlock 400NT]

Two-component, high-solids (minimum 85%) epoxy coating. Abrasion resistance when measured in accordance with ASTM D4060 using a 1 kg load/1000 cycles CS-17 wheel shall not exceed 102 mg; impact resistance when measured in accordance with ASTM D2794 shall be not less than 24 in-lb (direct), 6 in-lb (reverse); moisture vapor transmission when measured in accordance with ASTM D1653 shall be 6.04g/m<sup>2</sup>; Adhesion when measured in accordance with ASTM D4541 shall be 900 psi (200 psi minimum on concrete). No face blistering after 3000 hours of salt spray in accordance with ASTM B117. No face corrosion or blistering after 750 hours of humidity in accordance with ASTM D2247. No blistering after 1 year of fresh water immersion in accordance with NACE TM0169.

2.1.1.6 Radiation Resistant Coating [Amercoat 90]

Two-component, 56% minimum solids, high-performance amine phenolic epoxy coating resistant to  $1 \times 10^{10}$  rads radiation in accordance with requirements of ASTM D4082. Decontaminability shall conform to requirements of ASTM D4256. Thinner and cleaner shall be as manufactured by coating manufacturer.

2.1.1.7 Finish Coating [Amershield]

Two-component, minimum 70% solids, aliphatic polyurethane. Abrasion: ASTM D4060, no more than 60 mg loss, average 1,000 cycles CS-17 wheel, 1000g load. Impact resistance: ASTM D2794, direct, 140 inch-pounds, minimum; reverse, 50 inch-pounds, minimum; ultraviolet QUV weathering: ASTM G53, 72% gloss retention after 672 hours, 4/8 cycle.

2.2 FABRICATION AND MANUFACTURE

(Not Used)

2.3 CHEMICAL SERVICE

2.3.1 Decontamination Solutions

2.3.1.1 Solution Name and Chemical Composition

2.3.1.1.1 NDS: 12 wt% nitric acid & 0.75 wt% potassium permanganate.

2.3.1.1.2 ODS: 10 wt% oxalic acid.

2.3.1.1.3 DSS: Either 12.5 wt% sodium hydroxide; or 5 wt% trisodium phosphate.

2.3.1.1.4 FSK: Decontamination frit slurry, 8 wt% glass frit & 0.1 wt% formic acid.

2.3.1.1.5 LPW: Water; wherever a decontamination solution is used, water can be used for rinsing or for washing by itself.

2.3.1.2 Locations

2.3.1.2.1 Canister Decontamination Cell

Solution FSK.

2.3.1.2.2 All other areas

Solutions NDS, ODS, DSS, LPW. NDS and ODS can be up to boiling (about 212°F); LPW will be issued at ambient temperature (about 76°F); DSS will be issued at ambient temperature (about 76°F), and may be issued at 80°C (176°F) with trisodium phosphate.

2.3.1.3 Decontaminability

Decontaminability shall conform to requirements of ASTM D4256. Decontamination Factor (DF) shall be not less than 1.00.

## 2.4 FINISHES

2.4.1 Colors

2.4.1.1 Colors shall be as selected by the Buyer from the manufacturer's standard samples and in accordance with FED-STD 595B.

2.4.1.2 Formulate colors with colorants free of lead and lead compounds.

2.4.1.3 Where more than one coat of material is applied within an given system, alternate color hues per coat shall be used to provide a visual reference that the required number of coats have been applied (and also to indicate when overlying coats have been damaged). There shall be no single-layer systems.

## 2.5 RADIANT PANEL TEST

Materials shall meet the flame spread characteristics required by NFPA 101, Paragraph 28-3.3.1 for Class-B materials in accordance with the requirements of NFPA 255.

### **PART 3 EXECUTION**

#### **3.1 PREPARATION**

##### **3.1.1 General**

Surfaces shall be prepared in accordance with the coating manufacturer's written instructions unless otherwise specified. All surfaces shall be prepared with the objective of obtaining a clean, dry, and properly prepared substrate.

##### **3.1.2 Inspection**

Prior to the installation of any special coatings systems, examine the existing surfaces and substrate to verify that they are ready to receive the coatings in accordance with the manufacturer's printed instructions. In the event of discrepancy, promptly notify the Buyer. Do not proceed with installation in areas of discrepancy until authorized by the Buyer.

##### **3.1.3 Concrete Surfaces**

###### **3.1.3.1 Curing Period**

Concrete shall be allowed to cure a minimum of 28 days prior to the application of any coating, or as recommended by the manufacturer of the special coatings.

###### **3.1.3.2 Form Release Agents**

Form release agents used during the construction of the concrete shall be removed unless known to be compatible with the coating system selected.

###### **3.1.3.3 Curing Compounds**

Concrete curing compounds shall be removed unless known to be compatible with the coating system selected.

###### **3.1.3.4 Concrete Sealer/Hardener**

Concrete sealer/hardener as specified in Specification Section 03350, "Concrete Sealer and Hardener", shall be applied prior to application of special coatings only if acceptable to the manufacturer of the special coatings systems.

###### **3.1.3.5 Contaminants**

Oil, grease, and materials considered deleterious by the manufacturer of the special coatings shall be removed in accordance with manufacturer's written recommendations, followed

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by washing of contaminated areas with detergent and water; washing in accordance with ASTM D4258.

### 3.1.3.6 Blasting

3.1.3.6.1 Incompatible curing compounds, surface laitance, cement glaze, and efflorescence shall be removed by abrasive blast cleaning in accordance with ASTM D4259 and special coatings manufacturer's written instructions. Abrasive used for blasting shall be a maximum of 20-40 mesh and air pressure shall be reduced to prevent excess removal of concrete and exposure of aggregate. Concrete surfaces shall be blasted to a uniform roughness having a surface texture resembling medium grit sandpaper (120 grit). Blasting with water injection may be used to eliminate dust. Waterblasting with sand injection may also be used to produce an acceptable surface with no dusting from blasting.

3.1.3.6.2 Waterblasting in accordance with NACE RP0172 with a pressure of 3000 to 5000 psi will effectively remove the surface laitance and contaminants without exposing aggregate.

3.1.3.6.3 Vacuum blasting units may be utilized.

### 3.1.3.7 Acid Etching

Not allowed.

### 3.1.3.8 Defects

Defects in the concrete such as air pockets, pinholes, tie holes, form burrs, honeycombs, cracks, cold joints, and control joints shall be repaired before application of the coating system can proceed. Repairs shall be made following the blasting process using materials and methods in accordance with the manufacturer's written instructions.

### 3.1.3.9 Surface Soundness

Prepared surface soundness shall be tested in accordance with ACI 503R. If minimum tensile strength is less than 175 psi do not proceed with the work, and notify Buyer.

### 3.1.3.10 Moisture

Surfaces receiving coating shall be tested for the presence of moisture prior to application of the coating system by using the plastic sheet method in accordance with ASTM D4263 unless otherwise specified. Moisture content shall be within limits specified by the manufacturer before application of high performance paint can proceed.

3.1.4 Joint Preparation

Perform surface preparation and cleaning of all joints to receive special coatings applications. Joints shall be prepared in compliance with the coating manufacturer's written instructions for type and location of joint.

3.1.5 Mixing

3.1.5.1 Prepare multiple-component coatings using all contents of each component container as packaged by the coating manufacturer. No partial batches will be permitted.

3.1.5.2 Do not use mixed multiple-component coatings beyond their pot life. Provide small quantity kits for touch-up and for patching other small areas.

3.1.5.3 Mix only the components specified and furnished by the coating manufacturer.

3.1.5.4 Do not intermix additional components for reasons of color or otherwise, even with the same generic type of coating.

3.1.5.5 Seal coating materials when not in use.

3.2 INSTALLATION, APPLICATION AND ERECTION

3.2.1 General

Application shall be in accordance with ASTM D3843, ASTM D5144, and the manufacturer's written instructions unless otherwise specified.

3.2.2 Environmental Conditions

Temperature of materials and substrate shall be in accordance with the manufacturer's written instructions. If the manufacturer has no written instructions, then the material and substrate shall both be between 50°F and 110°F for 24 hours before, during, and after application, through the curing and drying periods, unless otherwise specified.

3.2.3 Humidity

Humidity shall be measured in the area prior to placing coating system. The humidity shall be within the range specified in the manufacturer's written instructions. If the manufacturer has no written instructions, no material shall be applied when the relative humidity is above 85% or the temperature of the surface is less than 5°F above the dew point unless otherwise specified.

3.2.4 Inclement Weather

3.2.4.1 Work may continue during inclement weather only if areas and surfaces to be coated are enclosed or protected and the temperature and environmental conditions within the area are maintained within the limits specified by the manufacturer during application and curing periods.

3.2.4.2 Allow wet surfaces to dry thoroughly and attain the temperature and moisture conditions specified before proceeding with or continuing the coating operation.

3.2.5 Chemical Contamination

If chemical contamination occurs between coats, it shall be removed by washing with water or solvent, and the surface dried before applying the next coat. Solvents, if used, shall be as approved by the special coatings manufacturer:

3.2.6 Application

3.2.6.1 General

All special coating applications shall be in strict accord with the manufacturer's printed instructions.

3.2.6.2 Method

3.2.6.2.1 Primers

Application by roller is preferred to assure complete coverage. For uneven concrete surfaces and concrete containing imperfections, a paint brush may be used. Care must be taken to use rollers and brushes that do not leave fibers and bristles in the primer. Spraying of primers will be permitted and shall be in accordance with the manufacturer's written instructions.

3.2.6.2.2 Coatings

Apply special coatings by brush, roller, spray, squeegee, trowel, or other applicators in accordance with the manufacturer's written recommendations.

3.2.6.3 Finish

Apply each coat to uniform finish, free of runs, sags, lap marks, air bubbles, and pin holes.



3.2.6.4 Number of Coats

The number of coats and coating film thickness required is the same regardless of the application method. Do not apply succeeding coats until previous coat has cured as recommended by coating manufacturer. The number of coats is the minimum required irrespective of the coating thickness. Additional coats may be required to obtain the minimum required coating thickness.

3.2.6.5 Material Thickness

Apply each material at not thinner than manufacturer's recommended spreading rate. Provide a total dry film thickness of entire coating system as recommended by the manufacturer, unless otherwise specified. Wet film thickness shall be measured in accordance with ASTM D1212. Dry film thickness shall be measured in accordance with ASTM D1005.

3.2.6.6 Brush Applications

Brush-out and work brush coats onto surfaces in an even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections.

3.2.6.7 Mechanical Applications

3.2.6.7.1 Use mechanical application methods for coating application when permitted by coating material manufacturer and governing ordinances.

3.2.6.7.2 Wherever spray application is used, apply each coat to provide equivalent hiding of brush applied coats. Do not double back with spray equipment building up film thickness of two coats in one pass, unless specifically recommended or permitted by coating material manufacturer.

3.2.7 Joints

Particular attention shall be given to the application of special coatings in conjunction with joints. Coating shall be applied in joints as recommended by the manufacturer for the particular type of joint condition. Joints shall be the closed type; not the open type.

3.2.8 Coves

Coves shall be radiused to a minimum of 4 inches and shall be reinforced to eliminate formation of voids underneath.

3.2.9 Sample Area

The sample area described in Part 1 of this specification section may, when approved, be incorporated into the work area.

3.3 FIELD QUALITY CONTROL

3.3.1 Testing

The Buyer reserves the right to invoke the following material testing procedure at any time, and any number of times during the work:

3.3.1.1 The Buyer may engage the service of an independent testing laboratory to sample materials being used. Samples of materials delivered to the project site may be taken, identified, sealed, and certified in the presence of the Seller.

3.3.1.2 Testing laboratory may perform appropriate tests to verify requirements specified in Paragraph 2.1 of this Specification Section, as well as in accordance with ASTM D3912 using chemical service requirements of Paragraph 2.3 of this Specification Section.

3.3.2 Inspection

Coating inspection shall comply with requirements of ASTM D3843 and ASTM D4537.

3.3.3 Physical Adhesion

Coated surfaces shall be tested in accordance with ASTM D5144 and ASTM D4541, and have a minimum tensile strength of 200 psi.

3.4 ADJUSTMENTS

3.4.1 Repairs

3.4.1.1 Damaged Coatings, Pinholes, Holidays, and Fisheyes

Edges shall be feathered and repaired using the coating materials specified for the original work, unless otherwise specified, in accordance with written recommendations of the coating manufacturer.

3.4.1.2 Apply all finish coats, including touch-up and damage repair coats in a manner which will present a uniform texture and color-matched appearance.

3.5 **CLEANING**

- 3.5.1 Special coatings materials applied to surfaces not intended or designated to receive special coating system shall be cleaned in accordance with the manufacturer's written instructions.

3.6 **PROTECTION**

3.6.1 Surfaces and Fixtures

Remove, mask, or otherwise protect surfaces and fixtures not intended to be coated.

3.6.2 Equipment

Protect working parts of mechanical and electrical equipment from damage during surface preparation and coating process.

3.6.3 Drains

Drains shall be plugged during installation of special coatings systems to ensure that coating does not enter drainage system. All gratings, if any, shall be removed prior to coating application.

3.6.4 Post-Installation Protection

Coated surfaces shall be protected as directed by the Buyer.

3.6.5 Signs

Provide "Wet Paint" signs as required to protect finishes.

3.6.6 Protective Wrappings

After coating application, remove temporary protective wrappings.

3.7 **DEMONSTRATION**

(Not Used)

3.8 SCHEDULES

Surfaces to receive special coatings, including surfaces specified but not shown, are scheduled in the Contract Drawings in accordance with the following Systems:

**SYSTEM A: IN-CELL/RADIATION RESISTANT**

Radiation Resistant Coating	2 coats @ 4 mils DFT per coat minimum
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**SYSTEM B: OUT-OF-CELL**

Primer/Sealer	as recommended by manufacturer
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Coating	2 coats @ 8 mils DFT per coat minimum
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Finish Coating	1 coat @ 5 mils DFT per coat minimum
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**SYSTEM C: OUT-OF-CELL**

Primer/Sealer	as recommended by manufacturer
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Self-Leveling Surfacer	1/8 inch DFT
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Coating	1 coat @ 8 mils DFT minimum
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Finish Coating	1 coat @ 5 mils DFT per coat minimum
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**SYSTEM D: OUT-OF-CELL**

Primer/Sealer	as recommended by manufacturer
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Surfacer	1/4 inch DFT minimum
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Coating	1 coat @ 8 mils DFT minimum
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Finish Coating	1 coat @ 5 mils DFT per coat minimum
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END OF SECTION

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U.S. DEPARTMENT OF ENERGY  
Hanford Waste Vitrification Plant  
Richland, Washington  
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.  
Advanced Technology Division  
Fluor Contract 8457

SECTION 09875  
PRIMING OF STEEL  
(B-595-C-B265A-09875)

APPROVED FOR CONSTRUCTION

REVISION 0  
ISSUE DATE 12-21-92

WAPA YES    NO X  
QUALITY LEVEL I    II X  
SAFETY CLASS 1    2    3 X 4   

ORIGINATOR(S):

CHECKER(S):

P. von Kronburg, Architect 12/18/92 J. L. Datte, Architectural Lead 12/18/92  
(Date) (Date)

APPROVED BY:

J. L. Datte 12/18/92  
J. L. Datte Lead Discipline Engineer (Date)

SECTION 09875  
PRIMING OF STEEL

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**SECTION 09875  
PRIMING OF STEEL**

**PART 1 GENERAL**

**1.1 SUMMARY**

This section covers minimum technical requirements for the preparation of steel surfaces other than stainless steel, and the furnishing and application of primer coating pursuant to application of special coatings or high performance paints.

**1.2 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM B117	1990 Standard Test Method of Salt Spray (Fog) Testing
ASTM D520	1984 (Reapproved 1989) Standard Specification for Zinc Dust Pigment
ASTM D1005	1984 (Reapproved 1990) Standard Test Method for Measurement of Dry Film Thickness of Organic Coatings Using Micrometers
ASTM D2247	1987 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
ASTM D4060	1984 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM G14	1988 Standard Test Method for Impact Resistance of Pipeline Coatings (Falling Weight Test)

**STEEL STRUCTURES PAINTING COUNCIL (SSPC)**

SSPC-PA1	1982 Shop, Field, and Maintenance Painting
SSPC-PA2	1982 Measurement of Dry Paint Thickness with Magnetic Gages

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SSPC-SP5	1989 Surface Preparation Specification No. 5, White Metal Blast Cleaning
SSPC-SP6	1989 Surface Preparation Specification No.6, Commercial Blast Cleaning
SSPC-SP7	1985 Surface Preparation Specification No. 7, Brush-Off Blast Cleaning
SSPC-SP10	1989 Surface Preparation Specification No. 10, Near-White Blast Cleaning
SSPC-PS 20	1982 Paint Specification No. 20, Zinc-Rich Primers (Type I, "Inorganic", and Type II, "Organic")
SSPC-PS Guide 12.00	1982 Guide for Selecting Zinc-Rich Painting Systems

1.3 **RELATED REQUIREMENTS**

(Not Used)

1.4 **DEFINITIONS**

1.4.1 DFT - Dry Film Thickness

1.5 **SYSTEM DESCRIPTION**

(Not Used)

1.6 **SUBMITTALS**

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract:

1.6.1 **Product Data**

Submit manufacturer's published technical information including Material Safety Data Sheets (MSDS), and application instructions for each primer specified or proposed.

1.6.2 **Test Reports**

Submit test reports made within the previous three years of the date of issue of this section on samples of the products proposed

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for the work. Such test reports shall be by nationally recognized laboratories or laboratories acceptable to the Buyer. Test Reports shall include dates of testing, locations from which samples were obtained, and test results including bond strengths, abrasion resistance, impact resistance, chemical resistance, temperature resistance, radiation resistance, and results of tests referred to in SSPC Paint 20, SSPC-PS Guide 12.00, and in Part 2 of this specification section.

1.6.3 Operation and Maintenance (O&M) Manuals

Submit manufacturer's printed application, maintenance, and repair instructions, including mixing instructions, pot life, storage requirements, surface preparation requirements, safety requirements, and intervals of monitoring and inspection.

1.6.4 Manufacturer's Approval of Applicator

Submit written approval of applicator by manufacturer of steel primer.

1.7 CLASSIFICATION OF SYSTEMS AND COMPONENTS

(Not Used)

1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS

(Not Used)

1.9 SPECIAL REQUIREMENTS

1.9.1 General

Priming of steel shall conform to requirements of SSPC-PS Guide 12.00.

1.9.2 Materials

All materials used for priming of steel, including thinners, cleaners, driers, and other additives shall be products of a single manufacturer. Application of multiple manufacturers' products is strictly prohibited.

1.9.3 Installer

Primer specified in this section shall be prepared and installed by an installer approved by the manufacturer of the materials.

## PART 2 PRODUCTS

### 2.1 MATERIALS AND EQUIPMENT

#### 2.1.1 General

Materials shall conform to requirements of SSPC-PS 20, Type I.

#### 2.1.2 Zinc Dust

Zinc dust shall conform to ASTM D520.

#### 2.1.3 Products

The products herein described are manufactured by Ameron, PCD, Brea California. They are intended to establish minimum acceptable standards of quality of materials, finish, and performance, and are not intended to exclude from consideration comparable products of other manufacturers. Products of other manufacturers will be permitted provided such materials are of equal quality and of the required characteristics for the purpose intended, subject to authorization by the Buyer.

##### 2.1.3.1 Primer 1 [Dimetecote 21-5]

Two-component, water-based inorganic zinc silicate exhibiting the following properties: zero VOC; salt spray (ASTM B117) after 5000 hours showing no face corrosion or blistering; humidity (ASTM D2247) after 720 hours showing no face corrosion; abrasion (ASTM D4060), with 1 kg load/1000 cycles, CS-17 wheel, weight loss not to exceed 40 mg; impact (ASTM G14), not less than 160 inch-pounds. Temperature resistance when dry shall be not less than 750°F.

##### 2.1.3.2 Primer 2 [Dimetecote 21-9]

Two-component, solvent-based (ethyl silicate) inorganic zinc primer exhibiting the following properties: VOC not to exceed 293 g/L mixed, 331 g/L mixed and thinned (1/2 pint thinner per gallon primer); salt spray (ASTM B117) after 5000 hours showing no face corrosion or blistering; humidity (ASTM D2247) after 720 hours showing no face corrosion; abrasion (ASTM D4060), with 1 kg load/1000 cycles, CS-17 wheel, weight loss not to exceed 40 mg; impact (ASTM G14), not less than 160 inch-pounds. Temperature resistance when dry shall be not less than 750°F.

### 2.2 FABRICATION AND MANUFACTURE

(Not Used)

## 2.3 FINISHES

### 2.3.1 Colors

2.3.1.1 Colors shall be as selected by the Buyer from the manufacturer's standard samples.

2.3.1.2 Formulate colors with colorants free of lead and lead compounds.

2.3.1.3 Where more than one coat of material is applied within a given system, alternate color hues per coat shall be used to provide a visual reference that the required number of coats have been applied (and also to indicate when overlying coats have been damaged).

## PART 3 EXECUTION

### 3.1 PREPARATION

#### 3.1.1 General

Surfaces shall be prepared in accordance with the more stringent requirements of SSPC-PS Guide 12.00, or the primer manufacturer's written requirements, or as herein specified. Surfaces shall be free of grease, oil, and other contaminants before further mechanical or chemical preparation. All surfaces shall be prepared with the objective of obtaining a clean, dry, and properly prepared substrate. There shall be no rough welds, sharp edges, or weld spatter on surfaces prior to priming.

#### 3.1.2 Blasting

Abrasive blast SSPC-SP5, or SSPC-SP10 to achieve a 1 to 2 mil (25-50 microns) anchor profile. Remove abrasive residue or dust from surface.

#### 3.1.3 Stainless Steel Surfaces

Stainless steel surfaces shall be excluded from requirements of this specification section.

#### 3.1.4 Galvanized Surfaces

Remove oil, soap film or grease from surface with neutral detergent or emulsion cleaner or roughen surface by light abrasive blast SSPC-SP7.

#### 3.1.5 Rusted Surfaces

Remove rusted spots by blasting SSPC-SP6 or SSPC-SP7.

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3.1.6 Solvent Wiping

Not permitted.

3.1.7 Mixing

3.1.7.1 Prepare multiple-component primer using all contents of each component container as packaged by the primer manufacturer. No partial batches will be permitted.

3.1.7.2 Do not use mixed multiple-component primer beyond pot life. Provide small quantity kits for touch-up and for patching other small areas.

3.1.7.3 Mix only the components specified and furnished by the primer manufacturer.

3.1.7.4 Do not intermix additional components for reasons of color or otherwise, even with the same generic type of primer.

3.2 INSTALLATION, APPLICATION, AND ERECTION

3.2.1 General

Application shall be in accordance with SSPC-PA1 and the manufacturer's written instructions unless otherwise specified.

3.2.2 Environmental Conditions

Temperature of materials and substrate shall be in accordance with the manufacturer's written instructions. If the manufacturer has no written instructions, then the material and substrate shall both be between 40°F and 120°F for 24 hours before, during, and after application, through the curing and drying periods, unless otherwise specified.

3.2.3 Humidity

Humidity shall be measured in the area prior to placing primer. The humidity shall be within the range specified in the manufacturer's written instructions. If the manufacturer has no written instructions, no material shall be applied when the relative humidity is above 85% or the temperature of the surface is less than 5°F above the dew point unless otherwise specified.

3.2.4 Application

Application by spray equipment is preferred to assure complete coverage.

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3.2.5 Thinning

Primer shall not be thinned unless specifically permitted by manufacturer's written instructions.

3.2.6 Finish

Apply each coat to uniform finish, free of runs, sags, lap marks, air bubbles, and pin holes. Damaged areas shall be resprayed.

3.2.7 Number of Coats

The number of coats is the minimum required irrespective of the coating thickness. Additional coats may be required to obtain the minimum required coating thickness. Do not apply succeeding coats until previous coat has cured as recommended by primer manufacturer.

3.2.8 Material Thickness

Thickness shall be measured in accordance with ASTM D1005 or SSPC-PA2. Thickness shall not exceed manufacturer's written recommendations.

3.3 FIELD QUALITY CONTROL

(Not Used)

3.3.1 Shop Quality Control

The Buyer reserves the right to invoke the following material testing procedure at any time, and any number of times during the work: the Buyer may engage the services of an independent testing laboratory to sample materials being used. Samples of materials delivered to the shop or field will be taken, identified, sealed, and certified in the presence of the Seller; the testing laboratory may perform appropriate tests to verify requirements specified in SSPC Paint 20, SSPC-PS Guide 12.00, and in Part 2 of this specification section.

3.4 ADJUSTMENTS

3.4.1 Repairs

3.4.1.1 Damaged Coatings, Pinholes, and Holidays

Edges shall be feathered and repaired using the primer materials specified for the original work, unless otherwise specified, in accordance with written recommendations of the primer manufacturer.

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- 3.4.1.2 Touch-up painting shall be in accordance with SSPC-PA1.
- 3.4.1.3 Apply all primer coats, including touch-up and damage repair coats in a manner which will present a uniform texture and color-matched appearance.

3.5 CLEANING

(Not Used)

3.6 PROTECTION

(Not Used)

3.7 DEMONSTRATION

(Not Used)

3.8 SCHEDULES

Apply primers in accordance with the following schedule:

SYSTEM A

Primer 1 1 coat @ 3 mils DFT minimum

or

Primer 2 1 coat @ 4 mils DFT minimum

END OF SECTION

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U.S. DEPARTMENT OF ENERGY  
Hanford Waste Vitrification Plant  
Richland, Washington  
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.  
Advanced Technology Division  
Fluor Contract 8457

SECTION 09940  
HIGH PERFORMANCE PAINTING  
B-595-C-B265A-09940

APPROVED FOR CONSTRUCTION

REVISION 0  
ISSUE DATE 12-21-92

WAPA YES    NO X  
QUALITY LEVEL I    II X  
SAFETY CLASS 1    2    3 X 4   

ORIGINATOR:

CHECKER:

P. von Kronburg 12/18/92  
P. von Kronburg, Architect Date

J. L. Datte 12/18/92  
J. L. Datte, Architectural Lead Date

APPROVED BY:

J. L. Datte  
J. L. Datte Lead Discipline Engineer

12/18/92  
Date

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SECTION 09940  
HIGH PERFORMANCE PAINTING  
B-595-C-B265A-09940

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**SECTION 09940  
HIGH PERFORMANCE PAINTING**

**PART 1 GENERAL**

**1.1 SUMMARY**

This section covers minimum technical requirements for the preparation of concrete surfaces and the furnishing and installation of high performance paints which are chemical resistant, abrasion resistant, and decontaminable.

**1.2 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

**AMERICAN CONCRETE INSTITUTE (ACI)**

ACI 503R                      1989 Use of Epoxy Compounds with Concrete

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM D1005                      1984 (Reapproved 1990) Standard Test Method for Measurement of Dry Film Thickness of Organic Coatings Using Micrometers

ASTM D1212                      1991 Standard Test Methods for Measurement of Wet Film Thickness of Organic Coatings

ASTM D3843                      1989 Standard Practice for Quality Assurance for Protective Coatings Applied to Nuclear Facilities

ASTM D3912                      1980 (Reapproved 1989) Standard Test Method for Chemical Resistance of Coatings used in Light-Water Nuclear Power Plants

ASTM D4227                      1983 (Reapproved 1989) Standard Practice for Qualification of Journeyman Painters for Application of Coatings to Concrete Surfaces of Safety-Related Areas of Nuclear Facilities

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ASTM D4258	1983 (Reapproved 1988) Standard Practice for Surface Cleaning Concrete for Coating
ASTM D4259	1988 Standard Practice for Abrading Concrete
ASTM D4263	1983 (Reapproved 1988) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4286	1990 Standard Practice for Determining Coating Contractor Qualification for Nuclear Powered Electric Generation Facilities
ASTM D4537	1991 Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coating Work in Nuclear Facilities
ASTM D4541	1985 (Reapproved 1989) Standard Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
ASTM D5144	1991 Standard Guide for Use of Protective Coatings Standards in Nuclear Power Plants
ASTM D5163	1991 Standard Guide for Establishing Procedures to Monitor the Performance of Safety Related Coatings in an Operating Nuclear Power Plant

FEDERAL STANDARDS (FED-STD)

FED-STD 595B	1989 Colors Used in Government Procurement
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NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

NACE RP0172	1972 Surface Preparation of Steel and Other Hard Materials by Water Blasting Prior to Coating or Recoating
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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101	1988 Life Safety Code
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NFPA 255

1990 Standard Method of Test of Surface  
Burning Characteristics of Building  
Materials

### 1.3 RELATED REQUIREMENTS

Specification Section 03350 Concrete Sealer and Hardener

Specification Section 09800 Special Coatings

### 1.4 DEFINITIONS

1.4.1 The terms "high performance painting", "painting", and "coating" are used interchangeably in this Specification Section.

#### 1.4.2 Surfaces

Surfaces are defined as all concrete surfaces, including trenches, vaults, and nonvisible areas when permanent or built-in fixtures, equipment, etc., are in place in areas to be painted as scheduled in the Contract Drawings.

#### 1.4.3 System

The words "system" and "systems" when used in conjunction with high performance paint refer to combinations of primer, coating, and finish coats as scheduled in Part 3 of this Specification Section.

#### 1.4.4 Open Joint

A joint which remains conspicuous after coating.

#### 1.4.5 Closed Joint

A joint which is concealed and inconspicuous after coating.

#### 1.4.6 DFT

Dry film thickness.

#### 1.4.7 WFT

Wet film thickness.

### 1.5 SYSTEM DESCRIPTION

(Not Used)

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## 1.6 SUBMITTALS

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract:

### 1.6.1 Product Data

Submit manufacturer's published technical information including Material Safety Data Sheets (MSDS), and application instructions for each high performance paint and joint material specified or proposed.

### 1.6.2 Samples

Submit samples of material and finish for review by Buyer before starting work.

### 1.6.3 Test Reports

#### 1.6.3.1 Submit test reports made within the previous three years of the date of issue of this section on samples of the products proposed for the work. Such test reports shall be by nationally recognized laboratories or laboratories acceptable to the Buyer. Test Reports shall include dates of testing, locations from which samples were obtained, and test results including compression strengths, bond strengths, abrasion resistance, impact resistance, chemical resistance, temperature resistance, radiation resistance, and results of tests referred to in Paragraph 2.1 of this specification section.

#### 1.6.3.2 Submit test reports made on samples of the systems proposed for the work in accordance with ASTM D3912 using the chemical service requirements of Paragraph 2.3 of this Specification Section.

### 1.6.4 Sample Panels or Sample Installations

Install in a location designated by the Buyer, a minimum of 100 square feet. The installation procedure as published by the manufacturer of the high performance paint is of prime importance. When approved by the manufacturer's representative and the Buyer, maintain the same controls and procedures throughout the remainder of the job. All work must be of the quality approved in the sample area.

### 1.6.5 Joint Treatment

Submit details for the treatment of construction, and control joints, including description of proposed materials and application procedures. Submit details for the treatment of cracks in the substrate to which high performance paint materials

are to be applied. Joint treatment details shall be submitted for information only.

**1.6.6 Operation and Maintenance (O&M) Manuals**

Submit manufacturer's printed application, maintenance, and repair instructions, including mixing instructions, pot life, storage requirements, surface preparation requirements, and safety requirements. Include inspection intervals, and methods of determining high performance paint system integrity. Comply with ASTM D5163.

**1.6.7 Manufacturer's Approval of Applicator**

Submit written approval of applicator by manufacturer of high performance paint.

**1.6.8 Installer's Qualifications**

Submit written documentation of qualifications conforming to requirements of ASTM D4286.

**1.6.9 Quality Assurance Program**

Submit written copy of Quality Assurance Program for each of the following:

Manufacture of Materials  
Installation  
Inspection

**1.7 CLASSIFICATION OF SYSTEMS AND COMPONENTS**

(Not Used)

**1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS**

The Vitrification Building has been designed to operate for 40 years with a normal operating temperature within the range 40°F to 120°F. Humidity is not controlled.

**1.9 DELIVERY, STORAGE, AND HANDLING**

**1.9.1** Deliver materials to the job site in the manufacturer's original, unopened packages, with labels intact, legible, and conspicuous. Provide the following information with all deliveries:

**1.9.1.1** Name or title of material;

**1.9.1.2** Manufacturer's name, stock number, and date of manufacture;

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- 1.9.1.3 Shelf life and special storage requirements;
- 1.9.1.4 Thinning instructions;
- 1.9.1.5 Mixing instructions;
- 1.9.1.6 Application instructions;
- 1.9.1.7 Clean-up instructions (for surfaces not intended to be coated);
- 1.9.1.8 Material Safety Data Sheets (MSDS) complete for each material provided in shipment.
- 1.9.2 Store materials not in actual use in tightly covered containers within the manufacturer's written recommended storage temperature ranges.
- 1.10 SPECIAL REQUIREMENTS
- 1.10.1 General
- High performance paint systems shall conform to requirements of ASTM D3843, including fabrication of materials, certification of installers, and application, testing, and inspecting.
- 1.10.2 Classification
- The high performance painting systems shall conform to requirements of ASTM D5144, Level II.
- 1.10.3 Materials
- 1.10.3.1 Single Manufacturer
- All materials of the special high performance paint systems, including primer, finish coats, thinners, cleaners, driers, and other additives shall be products of a single manufacturer. Application of multiple manufacturers's products is strictly prohibited.
- 1.10.3.2 Compatibility
- The manufacturer of high performance paint systems shall be identical to the manufacturer of special coatings as specified in Specification Section 09800, "Special Coatings".

1.10.4 Installer

High performance paint systems specified in this section shall be prepared and installed by firm(s) approved by the manufacturer of the materials. Individual installers employed by the approved firm(s) shall be qualified in accordance with ASTM D4227.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 Materials

The products herein described are manufactured by TNEDEC Company, Inc., Kansas City, Missouri. They are intended to establish minimum acceptable standards of quality of materials, finish, and performance, and are not intended to exclude from consideration comparable products of other manufacturers. Products of other manufacturers will be permitted provided such materials are of equal quality and of the required characteristics for the purpose intended, subject to authorization by the Buyer.

2.1.1.1 Filler/Surfacer [63-1500 Filler and Surfacer]

Two-component, non-shrinking, trowel-grade, 100% solids, solventless catalyzed epoxy filler and surfacer for use on concrete surfaces.

2.1.1.2 Primer [Series 201 Epoxoprime]

Two-component, polyamine epoxy primer for use on concrete surfaces. Solids by volume (mixed) shall be at least 94%.

2.1.1.3 Coating [Series 275 Stranlok]

Two-component, fiber reinforced, polyamine/novolac epoxy. Solids by volume (mixed) shall be not less than 88%.

2.1.1.4 Exterior Coating [Series 6 TNEDE-Cryl]

One-component, self-priming, emulsified acrylic coating. Solids by volume shall be at least 41%.

2.1.1.5 Finish [Series 282 TNEDE-Glaze]

Two-component, polyamine/novolac epoxy finish coating. Solids by volume (mixed) shall be not less than 95%.

(Not Used)

### 2.3.1 Decontamination Solutions

**2.3.1.1.1 NDS: 12 wt% nitric acid and 0.75 wt% potassium permanganate.**

2.3.1.1.3 DSS: Either 12.5 wt% sodium hydroxide; or 5 wt% trisodium phosphate.

2.3.1.1.4 LPW: Water; wherever a decontamination solution is used, water can be used for rinsing or for washing by itself.

Solutions NDS and ODS can be up to boiling (about 212°F); LPW will be issued at ambient temperature (about 76°F); DSS will be issued at ambient temperature (about 76°F), and may be issued at 80°C (176°F) with trisodium phosphate.

Decontaminability shall conform to requirements of ASTM D4256.  
Decontamination Factor (FD) shall be not less than 1.00.

### 2.4.1 Colors

2.4.1.1 Colors shall be as selected by the Buyer from the manufacturer's standard samples and in accordance with FED-STD 595B.

2.4.1.2 Formulate colors with colorants free of lead and lead compounds.

2.4.1.3 Where more than one coat of material is applied within a given system, alternate color hues per coat shall be used to provide a visual reference that the required number of coats have been applied (and also to indicate when overlying coats have been damaged). There shall be no single-layer systems.



## 2.5 RADIANT PANEL TEST

Materials shall meet the flame spread characteristics required by NFPA 101, Paragraph 28-3.3.1 for Class-B materials in accordance with the requirements of NFPA 255.

## PART 3 EXECUTION

### 3.1 PREPARATION

#### 3.1.1 General

Surfaces shall be prepared in accordance with the high performance paint manufacturer's written requirements unless otherwise specified. All surfaces shall be prepared with the objective of obtaining a clean, dry, and properly prepared substrate.

#### 3.1.2 Inspection

Prior to the installation of any high performance paint systems, carefully examine the existing surfaces and substrate to verify that they are ready to receive the paint in accordance with the manufacturer's printed criteria. In the event of discrepancy, promptly notify the Buyer. Do not proceed with installation in areas of discrepancy until authorized by the Buyer.

#### 3.1.3 Concrete Surfaces

##### 3.1.3.1 Curing Period

Concrete shall be allowed to cure a minimum of 28 days prior to the application of any paint, or as recommended by the manufacturer of the high performance paint.

##### 3.1.3.2 Form Release Agents

Form release agents used during the pouring of the concrete shall be removed unless known to be compatible with the high performance paint system selected.

##### 3.1.3.3 Curing Compounds

Concrete curing compounds used to retard water evaporation while the concrete is curing shall be removed unless known to be compatible with the high performance paint system selected.

3.1.3.4 Concrete Sealer/Hardener

Concrete sealer/hardener as specified in Specification Section 03350, "Concrete Sealer and Hardener", shall be applied prior to application of high performance paint only if acceptable to the manufacturer of the high performance paint systems.

3.1.3.5 Contaminants

Oil, grease, and materials considered deleterious by the manufacturer of the high performance paint shall be removed in accordance with manufacturer's written recommendations, followed by washing of contaminated areas with detergent and water; washing in accordance with ASTM D4258.

3.1.3.6 Blasting

3.1.3.6.1 Incompatible curing compounds, surface laitance, cement glaze, and efflorescence shall be removed by abrasive blast cleaning in accordance with ASTM D4259 and high performance paint manufacturer's written instructions. Abrasive used for blasting shall be a maximum of 20-40 mesh and air pressure shall be reduced to prevent excess removal of concrete and exposure of aggregate. Concrete surfaces shall be blasted to a uniform roughness having a surface texture resembling medium grit sandpaper (120 grit). Blasting with water injection may be used to eliminate dust. Waterblasting with sand injection may also be used to produce an acceptable surface with no dusting from blasting.

3.1.3.6.2 Waterblasting in accordance with NACE RP0172 with a pressure of 3000 to 5000 psi will effectively remove the surface laitance and contaminants without exposing aggregate.

3.1.3.6.3 Vacuum blasting units may be utilized.

3.1.3.7 Acid Etching

Not allowed.

3.1.3.8 Defects

Defects in the concrete such as air pockets, pinholes, tie holes, form burrs, honeycombs, cracks, cold joints, and control joints shall be repaired before application of the coating system can proceed. Repairs shall be made following the blasting process using materials and methods in accordance with the manufacturer's written instructions.

3.1.3.9 Surface Soundness

Prepared surface soundness shall be tested in accordance with ACI 503R. Testing of surface soundness shall not be required for surfaces on the exterior of the building. If minimum tensile strength is less than 175 psi do not proceed with the work, and notify Buyer.

3.1.3.10 Moisture

Surfaces receiving high performance paint shall be tested for the presence of moisture prior to application of the high performance paint system by using the plastic sheet method in accordance with ASTM D4263 unless otherwise specified. Moisture content shall be within limits specified by the manufacturer before application of high performance paint can proceed.

3.1.4 Joint Preparation

Perform surface preparation and cleaning of all joints to receive high performance paint applications. Joints shall be prepared in compliance with the paint manufacturer's written instructions for type and location of joint.

3.1.5 Mixing

3.1.5.1 Prepare multiple-component coatings using all contents of each component container as packaged by the high performance paint manufacturer. No partial batches will be permitted.

3.1.5.2 Do not use mixed multiple-component coatings beyond their pot life. Provide small quantity kits for touch-up and for patching other small areas.

3.1.5.3 Mix only the components specified and furnished by the high performance paint manufacturer.

3.1.5.4 Do not intermix additional components for reasons of color or otherwise, even with the same generic type of coating.

3.1.5.5 Seal paint and associated materials when not in use.

3.2 INSTALLATION, APPLICATION, AND ERECTION

3.2.1 General

Application shall be in accordance with ASTM D3843, ASTM D5144, and the manufacturer's written instructions unless otherwise specified.

### 3.2.2 Environmental Conditions

Temperature of materials and substrate shall be in accordance with the manufacturer's written instructions. If the manufacturer has no written instructions, then the material and substrate shall both be between 50°F and 110°F for 24 hours before, during, and after application, through the curing and drying periods, unless otherwise specified.

### 3.2.3 Humidity

Humidity shall be measured in the area prior to placing high performance paint system. The humidity shall be within the range specified in the manufacturer's written instructions. If the manufacturer has no written instructions, no material shall be applied when the relative humidity is above 85% or the temperature of the surface is less than 5°F above the dew point unless otherwise specified.

### 3.2.4 Inclement Weather

3.2.4.1 Work may continue during inclement weather only if areas and surfaces to be painted are enclosed or protected and the temperature and environmental conditions within the area are maintained within the limits specified by the manufacturer during application and curing periods.

3.2.4.2 Allow wet surfaces to dry thoroughly and attain the temperature and moisture conditions specified before proceeding with or continuing the painting operation.

### 3.2.5 Chemical Contamination

If chemical contamination occurs between coats, it shall be removed by washing with water or solvent, and the surface dried before applying the next coat. Solvents, if used, shall be as approved by the high performance paint manufacturer.

### 3.2.6 Application

#### 3.2.6.1 General

All high performance paint applications shall be in strict accord with the manufacturer's printed instructions.

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3.2.6.2 Method

3.2.6.2.1 Primers

Application by roller is preferred to assure complete coverage. For uneven concrete surfaces and concrete containing imperfections, a paint brush may be used. Care must be taken to use rollers and brushes that do not leave fibers and bristles in the primer. Spraying of primers will be permitted and shall be in accordance with the manufacturer's written instructions.

3.2.6.2.2 Coatings

Apply high performance paint coatings by brush, roller, spray, squeegee, trowel, or other applicators in accordance with the manufacturer's written recommendations.

3.2.6.3 Finish

Apply each coat to uniform finish, free of runs, sags, lap marks, air bubbles, and pin holes.

3.2.6.4 Number of Coats

The number of coats and coating film thickness required is the same regardless of the application method. Do not apply succeeding coats until previous coat has cured as recommended by high performance paint manufacturer. The number of coats is the minimum required irrespective of the coating thickness. Additional coats may be required to obtain the minimum required coating thickness.

3.2.6.5 Material Thickness

Apply each material at not thinner than manufacturer's recommended spreading rate. Provide a total dry film thickness of entire high performance paint system as recommended by the manufacturer, unless otherwise specified. Wet film thickness shall be measured in accordance with ASTM D1212. Dry film thickness shall be measured in accordance with ASTM D1005.

3.2.6.6 Brush Applications

3.2.6.6.1 Brush-out and work brush coats onto surfaces in an even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections.

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3.2.6.7 Mechanical Applications

3.2.6.7.1 Use mechanical application methods for coating application when permitted by high performance paint material manufacturer and governing ordinances.

3.2.6.7.2 Wherever spray application is used, apply each coat to provide equivalent hiding of brush applied coats. Do not double back with spray equipment building up film thickness of two coats in one pass, unless specifically recommended or permitted by coating material manufacturer.

3.2.7 Joints

Particular attention shall be given to the application of high performance paint in conjunction with joints. Coating shall be applied in joints as recommended by the manufacturer for the particular type of joint condition. Joints shall be the closed type; not the open type.

3.2.8 Sample Area

The sample area described in Part 1 of this specification section may, when approved, be incorporated into the work area.

3.3 FIELD QUALITY CONTROL

3.3.1 Testing

The right is reserved by the Buyer to invoke the following material testing procedure at any time, and any number of times during the application period:

3.3.1.1 The Buyer may engage the service of an independent testing laboratory to sample materials being used. Samples of materials delivered to the project site may be taken, identified, sealed, and certified in the presence of the Seller.

3.3.1.2 Testing laboratory may perform appropriate tests to verify requirements specified in Paragraph 2.1 of this Specification Section, as well as in accordance with ASTM D3912 using chemical service requirements of Paragraph 2.3 of this Specification Section.

3.3.2 Inspection

High performance paint inspection shall comply with requirements of ASTM D3843 and ASTM D4537.

3.3.3 Physical Adhesion

Painted surfaces shall be tested in accordance with ASTM D5144 and ASATM D4541, and have a minimum tensile strength of 200 psi.

3.4 ADJUSTMENTS

3.4.1 Repairs

3.4.1.1 Damaged Coatings, Pinholes, Holidays, and Fisheyes

Edges shall be feathered and repaired using the painting materials specified for the original work, unless otherwise specified, in accordance with written recommendations of the high performance paint manufacturer.

3.4.1.2 Apply all finish coats, including touch-up and damage repair coats in a manner which will present a uniform texture and color-matched appearance.

3.5 CLEANING

3.5.1 High performance paint materials applied to surfaces not intended or designated to receive high performance paint shall be cleaned in accordance with the manufacturer's written instructions.

3.6 PROTECTION

3.6.1 Surfaces and Fixtures

Remove, mask, or otherwise protect surfaces and fixtures not intended to be painted.

3.6.2 Equipment

Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process.

3.6.3 Post-Installation Protection

Painted surfaces shall be protected as directed by the Buyer.

3.6.4 Signs

Provide "Wet Paint" signs as required to protect finishes.

3.6.5 Protective Wrappings

After high performance paint application, remove temporary protective wrappings.

Rev. 0

3.7 DEMONSTRATION

(Not Used)

3.8 SCHEDULES

Surfaces to receive high performance paint, including surfaces specified but not shown, are scheduled in the Contract Drawings and in accordance with the following System:

SYSTEM A - INTERIOR

Primer	1 coat @ 8 mils DFT minimum
Coating	1 coat @ 25 mils DFT minimum
Finish	1 coat @ 8 mils DFT minimum

SYSTEM B - EXTERIOR

Exterior Coating	2 coats @ 3 mils DFT minimum
------------------	------------------------------

END OF SECTION

265A-09940-16



0	12/24/92	APPROVED FOR CONSTRUCTION	JLD P.K. JLD	SS
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS	
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SIGNATURE		DATE		
PROJ. DIR.		12/18/92		
QA MGR.		12-18-92		
INDEPENDENT SAFETY MGR.		12-18-92		
PROJECT MGR.		12/18/92		
SYSTEMS MGR.		12/18/92		
ENGINEERING MGR.		12/18/92		
SUPERVISOR		12/18/92		
DESIGN ENGINEER		12/18/92		
CHECKED		12/18/92		
DRAWN		07/09/92		
CLASSIFICATION		BY	DRAWING NUMBER	SHEET
NONE		NOT REQD	H-2-116007	1
				OF
				REV
				0

# U.S. DEPARTMENT OF ENERGY

Richland Field Office  
DE - AC06-86RL10838



**FLUOR DANIEL, INC.**  
ADVANCED TECHNOLOGY DIVISION

## VIT BLDG PAINT AND SPECIAL COATINGS TITLE SHEET

PROJECT TITLE  
**HANFORD WASTE VITRIFICATION PLANT**

PROJECT **B-595** FLUOR CONTRACT NO. **8457** CWBS NO. **B265A**

SCALE **SHOWN** BLDG NO. **1** INDEX NO.

DRAWING NUMBER **H-2-116007** SHEET **1** OF **1** REV **0**


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INITIALS: SS  
DATE: 12/18/92

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SIGNATURE		DATE	Richland Field Office DE - AC06-86RL10838			
PROJ. DIR.						
QA MGR		1800C92	 <b>FLUOR DANIEL, INC.</b> <b>ADVANCED TECHNOLOGY DIVISION</b>			
INDEPENDENT SAFETY MGR		12-18-92				
PROJECT MGR		12-18-92	<b>VIT BLDG</b> <b>PAINT AND SPECIAL COATINGS</b> <b>DRAWING INDEX</b>			
SYSTEMS MGR		12/18/92				
ENGINEERING MGR		12/18/92				
SUPERVISOR		12/18/92				
DESIGN ENGINEER		12/18/92				
CHECKED		12/18/92				
DRAWN		07/12/92	<b>HANFORD WASTE VITRIFICATION PLANT</b>			
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REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	JL Datto	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	James Howard	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
CHECKED	JL Datto	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.
DRAWN	S.SAM	09/24/92	SCALE	BLDG NO.	INDEX NO.
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NONE	NOT REQD	H-2-117586	1	1	0

DISTRIBUTION CODE: 301


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INITIALS: SS

DATE: 12/18/92

QUALITY LEVEL II  
SAFETY CLASS 3

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REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	JLDatte	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	Donna Koubek	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
CHECKED	JLDatte	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.
			B-595	8457	B265A
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NONE	NOT REQD	H-2-117587	1	3	0

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INITIALS: SS  
DATE: 12/18/92

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# QUALITY LEVEL II SAFETY CLASS 3

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REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
DRAWN	07/02/92	B-595	8457	B265A	
CLASSIFICATION	BY	SCALE	BLDG NO.	INDEX NO.	
NONE	NOT REQD	1/8" = 1'-0"	1		
		DRAWING NUMBER	SHEET	OF	REV
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INITIALS: SS  
DATE: 12/18/92

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REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	<p>PROJECT TITLE</p> <p>HANFORD WASTE VITRIFICATION PLANT</p>			
DESIGN ENGINEER	12/18/92				
CHECKED	12/18/92				
DRAWN	07/02/92				
INDEX		PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
		SCALE	BLDG NO.	INDEX NO.	
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DISTRIBUTION CODE: 301


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INITIALS: SS

DATE: 12/18/92

QUALITY LEVEL II  
SAFETY CLASS 3

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REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
DRAWN		SCALE	BLDG NO.	INDEX NO.	
S.SAM	07/09/92	1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
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INITIALS: SS  
DATE: 12/18/92

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QUALITY LEVEL II  
SAFETY CLASS 3

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REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	J C Datto	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	J C Datto	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
INDEX	CHECKED	J C Datto	12/18/92	PROJECT	FLUOR CONTRACT NO.
	DRAWN	S.SAM	07/08/92	B-595	8457
	CLASSIFICATION	NONE	BY	NOT REQD	CWBS NO.
					B265A
				SCALE	BLOG NO.
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				DRAWING NUMBER	INDEX NO.
				H-2-117589	
				SHEET	OF
				1	3
				REV	0

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INITIALS: SS  
DATE: 12/18/92




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REV _____ DATE _____			
ERO _____			
SIGNATURE	DATE		
PROJ DIR			
QA MGR			
INDEPENDENT SAFETY MGR			
PROJECT MGR			
SYSTEMS MGR			
ENGINEERING MGR			
SUPERVISOR	JL Datto	12/18/92	<p>PROJECT TITLE</p> <p><b>HANFORD WASTE VITRIFICATION PLANT</b></p>
DESIGN ENGINEER	JL Datto	12/18/92	
CHECKED	JL Datto	12/18/92	
DRAWN	S.SAM	07/09/92	
CLASSIFICATION	BY	DRAWING NUMBER	<p>PROJECT <b>B-595</b></p> <p>SCALE <b>1/8" = 1'-0"</b></p>
NONE	NOT REQD	H-2-117589	<p>FLUOR CONTRACT NO. <b>8457</b></p> <p>BLDG NO. <b>1</b></p>
			<p>CWBS NO. <b>B265A</b></p> <p>INDEX NO.</p>
			<p>SHEET <b>2</b></p> <p>OF <b>3</b></p> <p>REV <b>0</b></p>

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# QUALITY LEVEL II SAFETY CLASS 3

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REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR J L Datte		12/18/92	<p>PROJECT TITLE</p> <p>HANFORD WASTE VITRIFICATION PLANT</p>		
DESIGN ENGINEER J L Datte		12/18/92			
CHECKED J L Datte		12/18/92			
DRAWN S.SAM		07/10/92			
INDEX	CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF
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				REV	
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DISTRIBUTION CODE: 301


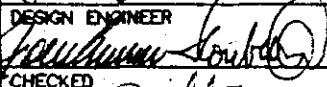
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INITIALS: SS

DATE: 12/18/92

QUALITY LEVEL II  
SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
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REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR J.C. Datto 12/18/92		PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT			
DESIGN ENGINEER  12/18/92		PROJECT B-595			
CHECKED J.C. Datto 12/18/92		FLUOR CONTRACT NO. 8457		CWBS NO. B265A	
DRAWN S.SAM 07/10/92		SCALE 1/8" = 1'-0"		BLDG NO. 1	
CLASSIFICATION NONE		BY NOT REQD		DRAWING NUMBER H-2-117590	
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INITIALS: SS


DATE: 12/18/92

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# QUALITY LEVEL II SAFETY CLASS 3

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REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
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DRAWN	07/10/92	SCALE	BLDG NO.	INDEX NO.	
S.SAM		1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117590	2	2	0

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INITIALS: SS

DATE: 12/18/92

# QUALITY LEVEL II SAFETY CLASS 3

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REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
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ENGINEERING RELEASE		<p><b>U.S. DEPARTMENT OF ENERGY</b></p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> <b>FLUOR DANIEL, INC.</b> ADVANCED TECHNOLOGY DIVISION</p> <p><b>ARCHITECTURAL VIT BLDG 2ND FLR PLAN-SOUTH END</b></p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
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SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
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CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
DRAWN	07/02/92	SCALE	BLDG NO.	INDEX NO.	
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NONE	NOT REQD	H-2-117591	1	2	0

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INITIALS: SS

DATE: 12/18/92

# QUALITY LEVEL II SAFETY CLASS 3

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REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
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INITIALS: SS

DATE: 12/18/92

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# QUALITY LEVEL II SAFETY CLASS 3

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CADFILE	B117592A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p align="center"><b>U.S. DEPARTMENT OF ENERGY</b></p> <p align="center">Richland Field Office DE - AC06-86RL10838</p> <p align="center"> <b>FLUOR DANIEL, INC.</b> <b>ADVANCED TECHNOLOGY DIVISION</b></p> <p align="center"><b>ARCHITECTURAL</b> <b>VIT BLDG</b> <b>3RD FLR PLAN-SOUTH END</b></p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
DRAWN		SCALE	BLDG NO.	INDEX NO.	
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117592	1	2	0

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78 79 80


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**A13**

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INITIALS: LK  
DATE: 12/18/92

# QUALITY LEVEL II SAFETY CLASS 3

0	12/12/92	APPROVED FOR CONSTRUCTION	JCD	PVK	JCD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117592B		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG 3RD FLR PLAN-NORTH END</p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	JL Datte	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	JL Datte	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
CHECKED	JL Datte	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.
DRAWN	S.SAM	07/10/92	B-595	8457	B265A
CLASSIFICATION	BY	DRAWING NUMBER	SCALE	BLDG NO.	INDEX NO.
NONE	NOT REQD	H-2-117592	1/8" = 1'-0"	1	
			SHEET	OF	REV
			2	2	0

DISTRIBUTION CODE: 301

A14

ACAD


INITIALS: LK

DATE: 12/18/92


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77 78 79 80



# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JCD	PVK	JCD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117593A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p align="center"><b>U.S. DEPARTMENT OF ENERGY</b></p> <p align="center">Richland Field Office DE - AC06-86RL10838</p> <p align="center"> <b>FLUOR DANIEL, INC.</b> ADVANCED TECHNOLOGY DIVISION</p> <p align="center"><b>ARCHITECTURAL VIT BLDG THIRD FLOOR MEZZ PLAN</b></p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
DRAWN	07/10/92	SCALE	BLDG NO.	INDEX NO.	
S.SAM		1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117593	1	1	0

# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JUD	PVK	JUD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117594A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG 4TH FLR PLAN-SOUTH END</p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	JL Datti	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	<i>[Signature]</i>	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
CHECKED	JL Datti	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.
DRAWN	S.SAM	07/11/92	B-595	8457	B265A
CLASSIFICATION	BY	SCALE	BLDG NO.	INDEX NO.	
NONE	NOT REQD	1/8" = 1'-0"	1		
		DRAWING NUMBER	SHEET	OF	REV
		H-2-117594	1	2	0

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A16


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INITIALS: LK  
DATE: 12/18/92

# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JCD	PVK	JCD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117594B		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p><b>U.S. DEPARTMENT OF ENERGY</b></p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> <b>FLUOR DANIEL, INC.</b> <b>ADVANCED TECHNOLOGY DIVISION</b></p> <p><b>ARCHITECTURAL</b> <b>VIT BLDG</b> <b>4TH FLR PLAN-NORTH END</b></p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
DRAWN	07/11/92	SCALE	BLDG NO.	INDEX NO.	
S.SAM		1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117594	2	2	0

# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117595A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p align="center"><b>U.S. DEPARTMENT OF ENERGY</b></p> <p align="center">Richland Field Office DE - AC06-86RL10838</p> <p align="center">  <b>FLUOR DANIEL, INC.</b>  <b>ADVANCED TECHNOLOGY DIVISION</b> </p> <p align="center"><b>ARCHITECTURAL VIT BLDG SECTION A</b></p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR JC Datti		12/18/92	PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT		
DESIGN ENGINEER J. Datti		12/18/92	PROJECT B-595		
CHECKED JC Datti		12/18/92	FLUOR CONTRACT NO. 8457		CWBS NO. B265A
DRAWN S.SAM		07/15/92	BLDG NO. 1		INDEX NO.
CLASSIFICATION NONE		BY NOT REQD	DRAWING NUMBER H-2-117595		SHEET 1
					OF 1
					REV 0

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77 78 79 80

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**A18**

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INITIALS: LK

DATE: 12/18/92

QUALITY LEVEL II  
SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117596A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTION B</p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
JL Datto		B-595	8457	B265A	
DRAWN	07/16/92	SCALE	BLDG NO.	INDEX NO.	
S.SAM		1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117596	1	1	0


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A19

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INITIALS: LK  
DATE: 12/18/92

# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117597A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p><b>U.S. DEPARTMENT OF ENERGY</b></p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> <b>FLUOR DANIEL, INC.</b> <b>ADVANCED TECHNOLOGY DIVISION</b></p> <p><b>ARCHITECTURAL</b> <b>VIT BLDG</b> <b>SECTION C-SOUTH END</b></p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR J C Datte 12/18/92		PROJECT TITLE <b>HANFORD WASTE VITRIFICATION PLANT</b>			
DESIGN ENGINEER J C Datte 12/18/92		PROJECT <b>B-595</b>			
CHECKED J C Datte 12/18/92		FLUOR CONTRACT NO. <b>8457</b>		CWBS NO. <b>B265A</b>	
DRAWN S.SAM 07/20/92		SCALE <b>1/8" = 1'-0"</b>		BLDG NO. <b>1</b>	
CLASSIFICATION <b>NONE</b>		BY <b>NOT REQD</b>		DRAWING NUMBER <b>H-2-117597</b>	
		SHEET <b>1</b>		OF <b>2</b>	
				REV <b>0</b>	

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**A20**

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INITIALS: LK

DATE: 12/18/92

QUALITY LEVEL II  
SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117597B		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTION C-NORTH END</p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
DRAWN		SCALE	BLDG NO.	INDEX NO.	
S.SAM	07/21/92	1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117597	2	2	0

DISTRIBUTION CODE: 301

A21


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INITIALS: LK

DATE: 12/18/92

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QUALITY LEVEL II  
SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117598A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTION D-SOUTH END</p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR JC Datti 12/18/92		PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT			
DESIGN ENGINEER Jen/Man 12/18/92		PROJECT B-595			
CHECKED JC Datti 12/18/92		FLUOR CONTRACT NO. 8457		CWBS NO. B265A	
DRAWN S.SAM 08/11/92		SCALE 1/8" = 1'-0"		BLDG NO. 1	
CLASSIFICATION NONE		BY NOT REQD		DRAWING NUMBER H-2-117598	
		SHEET 1		OF 2	
				REV 0	

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A22

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INITIALS: LK  
DATE: 12/18/92




QUALITY LEVEL II  
SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	RVK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117598B		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTION D-NORTH END</p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	JL Datti	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	<i>[Signature]</i>	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
CHECKED	JL Datti	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.
			B-595	8457	B265A
DRAWN	S.SAM	08/12/92	SCALE	BLDG NO.	INDEX NO.
			1/8" = 1'-0"	1	
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117598	2	2	0

# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	RJK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117599A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p align="center"><b>U.S. DEPARTMENT OF ENERGY</b></p> <p align="center">Richland Field Office DE - AC06-86RL10838</p> <p align="center">  <b>FLUOR DANIEL, INC.</b>  <b>ADVANCED TECHNOLOGY DIVISION</b> </p> <p align="center"> <b>ARCHITECTURAL</b>  <b>VIT BLDG</b>  <b>SECTION E-SOUTH END</b> </p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	<p align="center"><b>PROJECT TITLE</b></p> <p align="center"><b>HANFORD WASTE VITRIFICATION PLANT</b></p>			
DESIGN ENGINEER	12/18/92				
CHECKED	12/18/92				
DRAWN	08/13/92				
INDEX		PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
		SCALE	BLDG NO.	INDEX NO.	
		1/8" = 1'-0"	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117599	1	2	0

# QUALITY LEVEL II SAFETY CLASS 3

0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117599B		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE -- AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTION E-NORTH END</p>			
REV _____ DATE _____					
ERO _____					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	JC Datta	12/18/92	PROJECT TITLE		
DESIGN ENGINEER	Jouhanna Loutrou	12/18/92	HANFORD WASTE VITRIFICATION PLANT		
CHECKED	JC Datta	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.
			B-595	8457	B265A
DRAWN	S.SAM	8/18/92	SCALE	BLDG NO.	INDEX NO.
			1/8" = 1'-0"	1	
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117599	2	2	0

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A25

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INITIALS: LK

DATE: 12/18/92

GRAPHIC SCALE

 $1/4" = 1'-0"$ 

QUALITY LEVEL II  
SAFETY CLASS 3

0	12/11/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117600A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTS F, G, H, J, P &amp; R</p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
DRAWN		SCALE	BLDG NO.	INDEX NO.	
S.SAM	08/24/92	SHOWN	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117600	1	1	0

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77 78 79 80

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INITIALS: LK

DATE: 12/18/92


QUALITY LEVEL II  
SAFETY CLASS 3

0	12/11/92	APPROVED FOR CONSTRUCTION	JLD	PvK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117601A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTS L &amp; M</p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
DRAWN	09/01/92	B-595	8457	B265A	
CLASSIFICATION	BY	SCALE	BLDG NO.	INDEX NO.	
NONE	NOT REQD	1/8" = 1'-0"	1		
		DRAWING NUMBER	SHEET	OF	REV
		H-2-117601	1	1	0

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A

QUALITY LEVEL II  
SAFETY CLASS 3

0	12/11/92	APPROVED FOR CONSTRUCTION	JLD	RK	JLD
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS		
CADFILE	B117602A		CADCODE	2B:IBM:ACD2:10.C2:SS	
ENGINEERING RELEASE		<p>U.S. DEPARTMENT OF ENERGY</p> <p>Richland Field Office DE - AC06-86RL10838</p> <p> FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION</p> <p>ARCHITECTURAL VIT BLDG SECTS K, N &amp; TYP DETAILS</p>			
REV	DATE				
ERO					
SIGNATURE	DATE				
PROJ DIR					
QA MGR					
INDEPENDENT SAFETY MGR					
PROJECT MGR					
SYSTEMS MGR					
ENGINEERING MGR					
SUPERVISOR	12/18/92	PROJECT TITLE			
DESIGN ENGINEER	12/18/92	HANFORD WASTE VITRIFICATION PLANT			
CHECKED	12/18/92	PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
		B-595	8457	B265A	
DRAWN		SCALE	BLDG NO.	INDEX NO.	
S.SAM	09/28/92	SHOWN	1		
CLASSIFICATION	BY	DRAWING NUMBER	SHEET	OF	REV
NONE	NOT REQD	H-2-117602	1	1	0

INDEX

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INITIALS: LK  
DATE: 12/18/92